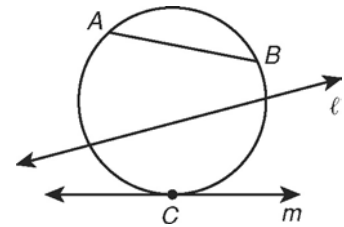


Dear Family,

In this unit, your child will learn about circles. In particular, your child will look at the lines, segments, and angles found inside and outside of circles.

Your child will first have to review the lines and segments that intersect circles.

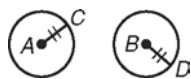
\overline{AB} is a **chord**. A chord is a segment whose endpoints lie on a circle.



Line ℓ is a **secant**. A secant is a line that intersects a circle at two points.

Line m is a **tangent**. A tangent line is in the same plane as a circle and intersects that circle at only one point. This one point is called the **point of tangency**. This is point C in the figure above.

There are three ways your child can talk about pairs of circles. The circles can be congruent, concentric, or tangent. These are shown in the three diagrams below.



Congruent circles

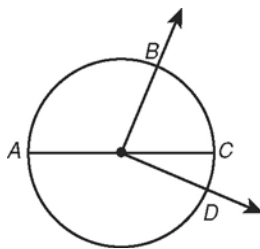


Concentric circles



Tangent circles

Your child will learn to identify different parts of a circle.
Consider the following circle:

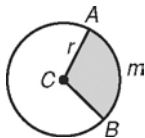
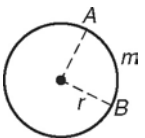
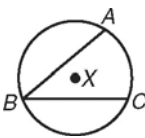


In this circle, $m\widehat{ADC} = 180^\circ$. It is a semicircle of the circle.

A **major arc** of this circle is \widehat{DAB} .

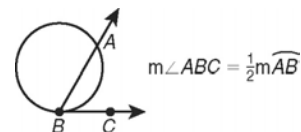
A **minor arc** of this circle is \widehat{BD} .

Other values of a circle that your child will be calculating are included in the table

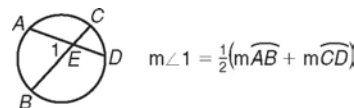
Term	Name	Example	Calculation
Sector —region bounded by two radii of a circle and their intercepted arc	Sector ACB		$A = \pi r^2 \left(\frac{m^\circ}{360^\circ} \right)$
Arc length —distance along an arc measured in linear units	L		$L = 2\pi r \left(\frac{m^\circ}{360^\circ} \right)$
Inscribed angle —angle whose vertex is on a circle and whose sides contain chords of the circle	$\angle ABC$		$m\angle ABC = \frac{1}{2}m\widehat{AC}$

Your child will also look at angle and segment relationships in circles. There are several theorems that will help with this.

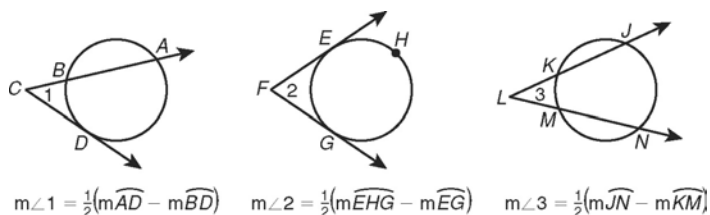
Theorem: If a tangent and a secant (or chord) intersect on a circle at the point of tangency, then the measure of the angle formed is half the measure of its intercepted arc.



Theorem: If two secants or chords intersect in the interior of a circle, then the measure of the angle formed is half the sum of the measures of its intercepted arcs.

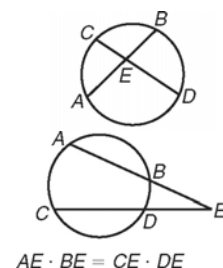


Theorem: If a tangent and a secant, two tangents, or two secants intersect in the exterior of a circle, then the measure of the angle formed is half the difference of the measures of its intercepted arcs.

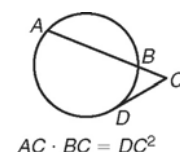


Theorem: If two chords intersect in the interior of a circle, then the products of the lengths of the segments of the chords are equal.

Theorem: If two secants intersect in the exterior of a circle, then the product of the lengths of one secant segment and its external segment equals the product of the lengths of the other secant segment and its external segment.



Theorem: If a secant and a tangent intersect in the exterior of a circle, then the product of the lengths of the secant segment and its external segment equals the length of the tangent segment squared.



The following are the assignments and the assessments for this unit. As a reminder the actual dates when the assignments are assigned can be found on the [assignment calendar](#) on my [school webpage](#). This can be found under classrooms on the [high school webpage](#).

Are You Ready Chapter 12 Pretest.

12-1 Lines that Intersect a Circle: (p 798) 11-17, 20, 26.

12-2 Arcs and chords: (p 807) 21, 23, 25, 27, 29-35, 37, 38, 40, 45-47.

12-3 Sector Area & Arc Length: (p 813) 12, 13, 15, 17, 18, 19, 21, 24.

Ready to Go On Section 12A

Chapter 12 quiz 1.

12-4 Inscribed Angles (p 824) 13, 15, 16, 17, 19, 21-26, 29, 34, 35, 37, 39, 40.

12-5 Angle Relationships in Circles (p 835) 17, 19, 21, 22, 23, 25-29, 30, 31-33, 37, 38, 40-43.

12-6 Segment Relationships in Circles: (p 844) 13-15, 17-19, 21, 22, 24, 27, 30-35.

12-7 Circles in the Coordinate Plane (*p* 850) 11-17 odd, 18, 20, 24, 28, 29, 34, 36, 38, 41.

Ready to Go On Section 12B

Chapter 12 Quiz 2

Chapter 12 test